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NCBC GULFPORT
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TECHNICAL MEMORANDUM TO ADDRESS COMMENTS ON THE 1 NOVEMBER 2002
TECHNICAL MEMORANDUM REGARDING EVALUATION OF SITE 8A STORM WATER
DETENTION ALTERNATIVES NCBC GULFPORT MS
12/4/2002
TETRA TECH

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TECHNICAL MEMORANDUM

Date: 4 December 2002

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Gordon Crane (NCBC Environmental)
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RE: Evaluation of Mississippi Storm Water Regulations
Site 8 – Herbicide Orange Storage Area
Naval Construction Battalion Center
Gulfport, Mississippi

The purpose of this technical memorandum is to address comments on the November 1, 2002 technical memorandum regarding evaluation of Site 8A storm water detention alternatives made during the November 18, 2002 telephone conference call between the Navy, Air Force, and TtNUS. The comments consisted of determining the requirements of the Mississippi Storm Water Regulations and discussing the appropriateness of the pre-construction run-off curve number for the Site 8A – Herbicide Orange Storage Area (Site 8A) remedial design.

Regulatory Requirements

TtNUS reviewed both the Mississippi Storm Water Pollution Prevention Plan Guidance Manual ("Manual") for Construction Activities and the Mississippi State Regulations for requirements on how to manage increased storm water runoff resulting from construction activities. Although the state regulations require that pre- and post-construction runoff be determined, the regulations do not contain specific language that may be used to determine if storm water detention devices are required. However, the Manual does indicate that if the stream or creek that the storm water is being discharged into is not on the Section 303(d) list for siltation, turbidity or habitat alterations, additional controls for site discharge are not required. In addition, the Manual requires compliance with all local storm water ordinances.

Canal Number 1, which receives direct storm water runoff from NCBC, is not on the 303(d) list based on review of Section 303(d) of the Clean Water Act ["303(d) list"]. However, Turkey Creek, which receives flow from Canal Number 1, is on the 303(d) list, indicating that storm water controls are required for runoff from NCBC. To determine the types of controls required, TtNUS contacted the Water Quality Assessment Branch of the Mississippi Department of Environmental Quality (MDEQ). MDEQ indicated that although Turkey Creek is on the 303(d) list, if the discharge from NCBC is strictly storm water runoff, controls may not be required. A final determination would be made by

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MDEQ on the need for storm water detention following the submittal of the Storm Water Pollution Prevention Plan to MDEQ. As suggested in the Mississippi Storm Water Pollution Prevention Plan guidance manual, TtNUS also contacted Harrison County to determine the requirements for storage of increased storm water runoff resulting from construction activities. Harrison County replied that the requirement to construct storm water detention features would be dependent on the drainage system that the increased storm water runoff is being discharged to. TtNUS provided Harrison County with general information regarding potential increases in peak storm water runoff, the outfalls to which the runoff would be directed, and the drainage system that those outfalls currently feed. TtNUS has not yet heard from Harrison County on the requirement for storm water detention.

Storm Water Runoff

As requested by NCBC, TtNUS also evaluated the historic use and conditions of Site 8A to determine an appropriate pre-construction site condition. After determining the appropriate pre-construction site condition, TtNUS determined an appropriate CN that is representative of the established pre-construction site condition.

In TtNUS' previous Storm Water Detention Memorandum (November 1, 2002), TtNUS indicated that a CN of 70 would be representative of Site 8A pre-construction conditions. Using a post-construction CN of 98 (representing the site as being paved over the 13 acre area) the increased runoff was calculated to be 80 cubic feet per second (cfs). Since the submission of the previous Storm Water Detention Memorandum, TtNUS has been able to further evaluate pre-construction conditions based on soil types and historic use and determined pre-construction conditions should be based on pre-remedial conditions as described below.

In 1961 the soils of Site 8 were amended using a soil/Portland cement mixture to harden the surface to allow the operation of heavy equipment. From 1968 through 1977, Site 8 was used as a staging area by the USAF for the storage of drums containing Herbicide Orange (HO). In 1977 the USAF removed the drums of HO. Due to residual soil contamination, the site was fenced in to restrict access. From 1977 through 1985 Site 8 vegetation was allowed to take over the staging/storage areas. In 1986 the USAF began treating the contaminated soils of Site 8 through incineration and stockpiling the ash on Site 8A. From 1988 through present, aside from miscellaneous activities, the vegetation has been allowed to take over Site 8A. Due to the historic activities on Site 8A and the current storm water regulations, the vegetated and topographic conditions that are pre-remediation efforts (pre-1977) have been selected as the pre-construction conditions for the purposes of calculating the pre-construction storm water runoff from Site 8A.

Based on photographs of the site while it was being used as a drum storage area, the site can be described as a dirt parking area in an urban setting. The United States Department of Agriculture (USDA) soil survey for Harrison County describes the natural surface soils of Site 8A as belonging to hydrologic soil groups B-D and C. Using these soil groupings and the pre-construction site conditions a CN of 77 is judged an appropriate CN to calculate the pre-construction runoff. However, when considering

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the amended soil (soil/Portland Cement mixture), it is appropriate to consider the surface as harder and more likely to shed rainfall rather than absorb the rainfall. Therefore, it is appropriate to use a soil grouping of D along with an adjusted CN of 89.

In the previous Storm Water Memorandum the calculated pre-construction peak runoff using a CN of 70 was approximately 40 cfs. Using the revised CN of 89 and pre-1977 site conditions, the peak pre-construction runoff changes to approximately 114 cfs. Considering the same post construction conditions (concrete over 13 acres), the net increase in peak runoff changes from 80 cfs (original technical memorandum) to 6 cfs, which reduces the increase in peak runoff by approximately 74 cfs.

Storage Evaluation

Using the revised increase in peak runoff (6 cfs), it is estimated that 2.0 acre-feet of storage is needed if 100% storage of the increased runoff is required. TtNUS also evaluated the volume of contaminated soil from on-base channels that will be excavated as part of the remedial action. The volume of contaminated soil from on-base channels being excavated that can be used as storage is approximated 13,000 cy (25,000 cy adjusted by a 1.2 bulking factor, decreased to account for the volume from channels not receiving runoff from Site 8A, and decreased to account for restoration of the channels after the remedial action). The excavation of contaminated soils from on-base channels will result in approximately 8-acre feet of storage in the on-base channels. Therefore, a base-wide increase in storm water detention capacity (8 acre feet) resulting from the excavation of contaminated soils from the drainage channels and the removal of sediment recovery traps exceeds the 2.0 acre-feet storage requirement resulting for the placement of concrete over 13 acres of Site 8A.

Conclusions

Based on the November 25, 2002 telephone conference between NCBC, USAF, and TtNUS personnel, the Storm Water Pollution Prevention Plan will present the following storm water flow and storage conditions.

- Storm water detention is required for any increase in storm water runoff resulting from the construction activities at Site 8A.
- The storage gained from remediation of the on-base drainage channels is sufficient to store the expected increase in storm water runoff at Site 8A.
- Pre-construction site conditions will be represented by pre-remediation conditions (pre-1977).
- CN factor for soil/Portland cement mixture will be increased from 70 to 89.